



Image Recording on Commercial Aircraft

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Airline Problems

- Increased Requirements
- Reduced Passenger Numbers
- Reduced Income
 - easyJet £48 Million 1/2 Year Losses
 - KLM €252 Million Q4 2002 Losses
 - US Airways \$282 Q1 2003 Losses
 - American Airlines \$1.05 Million Q1 Losses
 - United Airlines \$1.3 Billion Q1 Losses

War On Terrorism

■ Goals

- Justice
- Restoration of Confidence
- Restoration of “Normality”
- Getting Airline passengers flying again



US Response

- Tiger Team
- Transportation Security Agency
 - FAA
 - 55,000 employees
 - 450 airports
- Department of Homeland Security



What has been done?

- Federal Operated Air Marshals (TSA)
- Increased airline security measures
 - Reinforced flight deck doors
- Video Surveillance Systems



Aircraft Mounted Equipment

- Environmental considerations:
 - Light Range
 - Temperature Range
 - Power Supply Variability
 - Pressure
- Operational Considerations
 - Reliability
 - Maintenance
 - Certification



New Standard – Traditional Path

- CNS/ATM
 - EUROCAE WG50
 - ED-92 MASPS
 - ED-111 MOPS
 - ED-112 MOPS
 - NPRM
 - FAA
 - CAA
 - Rule



New Standard – Security System

- International Civil Aviation Organisation?
- Department of Homeland Security?
- Transportation Security Agency?
- Regulators?
- Manufacturers???
- Airlines ???



What do the airlines need?

- Cockpit Door Security System (CDSS) like **CabinVu**
- Features:
 - Camera(s) outside the cockpit
 - Flight deck mounted LCD monitor



Looking to the Future

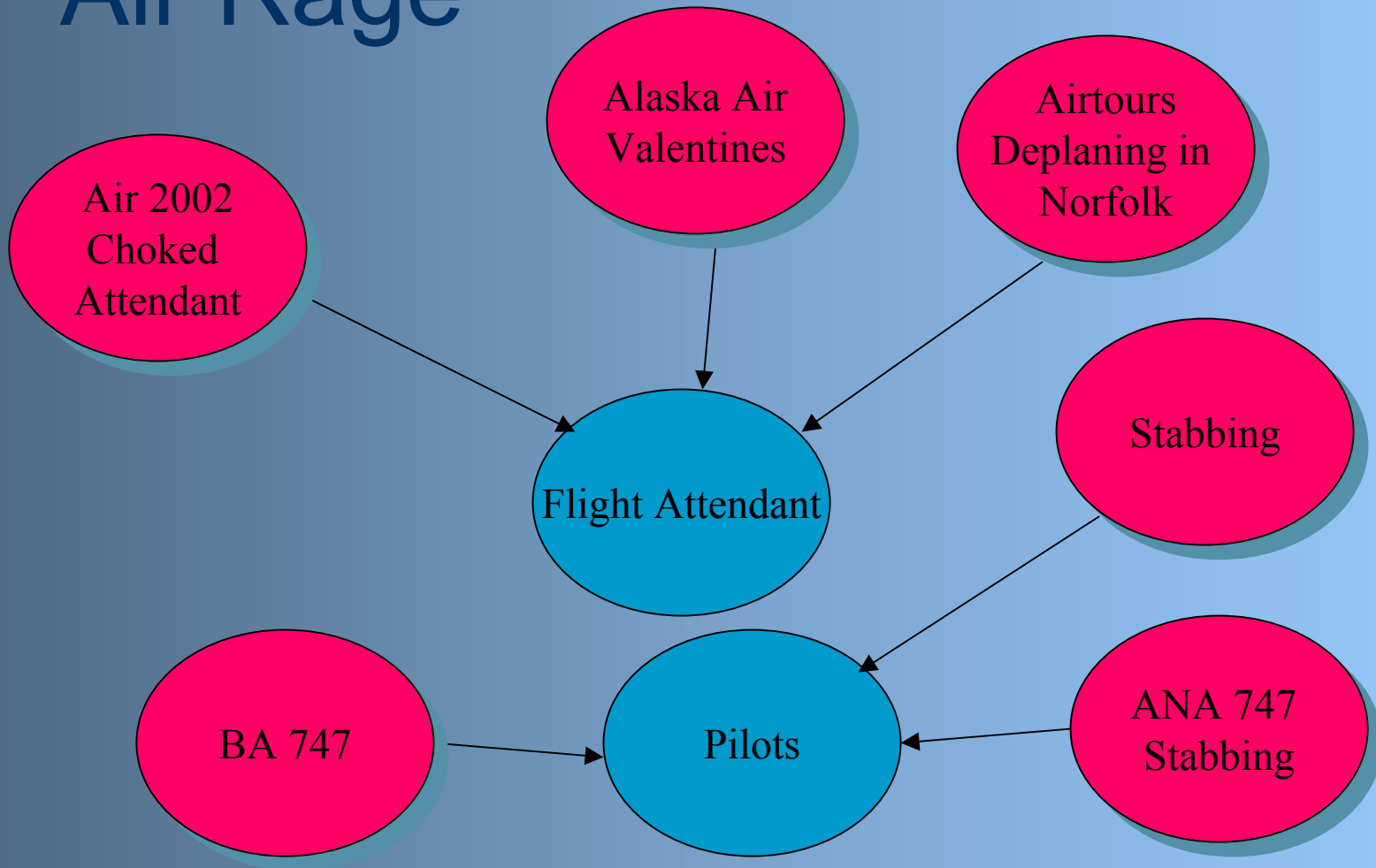
- Enhanced system
 - cameras throughout the cabin
 - greater security for cabin crew and passengers
- Be Recorded
- Be Downlinked



Air Rage

- Japan
 - 570 incidents (2000)
- US
 - 314 incidents (2000)
 - 306 incidents (1999)
- Rest of the World
- How many go unreported?

Air Rage



Applicable Technology

- Digital Video Servers
 - Multiple Cameras
 - Recorded Compressed Images
 - Ethernet Accessible
 - 16 Cameras/69 hours of recording
 - Interface to Air Accident Recorder



Applicable Technology

- Wireless Transmission
 - IEEE 802.11b
 - Wireless Interface
 - 2.4GHz microwave transmission
 - Secure
 - Low Power
 - No License
 - 11 Mbit



Applicable Technology

- Satellite Transmission
 - Originally In Flight Entertainment
 - High Bandwidth Links
 - Ethernet Connectability
 - Security Monitoring
 - Simplifies Command & Control



Applicable Technology

- Electronic Flight Bag
 - General Purpose PC on the flight deck
 - Streamline Paperwork
 - Update Flight Documents
 - Manuals
 - Monitor Video Cameras



Conclusion

- Accident Investigation
 - 7 years work by EUROCAE
 - 3 to 5 years remaining
- Flightdeck Security System
 - Not yet started



■ Security Systems

- Can the Public Wait?

- Can the Industry Wait?

Questions?

